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ABSTRACT

This paper synopsizes the central findings of a 2-year empirical study into how the new rhetorical situations presented by hypertext affect the writing process and thus impact upon literacy and education. It theorizes a conceptual model based on these findings. New technologies are transforming literacy in general and writing in particular. Hypertext is perhaps the most radical transformation to date. In hypertext, writers struggle to master a new process that includes electronic links, visual images, sound, animation, and other forms of data within a single digitized writing space. This transformation challenges educators to reframe their roles and points of reference as they increasingly use hypertext in the form of websites to enhance curriculum. Hypertext offers new opportunities for optimizing learning. New process models help to rethink conceptions of writing in order to adapt this new form of writing to best pedagogical practices. This research was guided by the overarching question: How are writers' perceptions of the new rhetorical situations presented by hypertext affecting their attitudes towards writing and the consequent decisions they make in response to these perceptions? (Author/AEF)

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From Gutenberg's Galaxy to Cyberspace: A New Model for a New Writing Space

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Abstract: This paper synopsizes the central findings of a two-year empirical study into how the new rhetorical situations presented by hypertext affect the writing process and thus impact upon literacy and education. It theorizes a conceptual model based on these findings.

New technologies are transforming literacy in general and writing in particular. Hypertext is perhaps the most radical transformation to date. In hypertext, writers struggle to master a new process that includes electronic links, visual images, sound, animation, and other forms of data within a single digitized writing space. This transformation challenges educators to reframe our roles and points of reference as we increasingly use hypertext in the form of websites to enhance curriculum. Hypertext offers new opportunities for optimizing learning if we use it well. We need new process models to help us rethink our conceptions of writing in order to adapt this new form of writing to best pedagogical practices. This paper presents such a model.

This paper synopsizes the key findings of a completed two-year conceptual and empirical study of the hyperwriting process. My research was guided by the overarching question: *How are writers' perceptions of the new rhetorical situations presented by hypertext affecting their attitudes towards writing and the consequent decisions they make in response to these perceptions?* The study was the basis of my recently completed doctorate. My position within the study was that of an "indwelling researcher" who inhabits the world s/he is studying. That is, my dissertation was composed and submitted as a hypertextual website. It was the first dissertation of its kind at my university—both content and form—and one of the first in the world. It challenged academic norms in both content and form and successfully redefined academic notions of literacy to some degree.

The findings of this study are contextualized within a significant body of pre-hypertextual writing theory and a small but growing body of hypertext theory. Unlike writing theory, hypertext theory consists principally of speculative theorizing. Little attention has been paid to the particulars of the writing or reading processes, and empirical studies are virtually non-existent. This study begins to address that imbalance.

The design of my study is based on phenomenological concepts and methods common to qualitative research using an emergent, field-based, ethnographic approach. This framework is well-adapted to the complex nature of the writing process—a process that is rooted in individual human cognition contextualized within a social experience. Because our "social universe" is constructed, it does not exhibit the same kind of cause and effect consistency as the physical universe. A qualitative methodology allows for the unpredictability and variability inherent in this socio-cognitive process (Denzin, Donmoyer, North, Villanueva). The emergent interdisciplinary paradigm of the ethnographic approach (Clifford and Marcus, Geertz) further supports the goal of discovery and deeper understanding, important in a discipline such as hypertext theory that is itself interdisciplinary and emergent. Purposive sampling allows for a range of experience with maximum variation, and data collection in natural settings respects the importance of context in an intrinsically social activity. Inductive analysis helps to ensure that what is seen as important is determined not only by the researcher, but by the informants and the data they generate (Eisner, Glesne and Peshkin, Maykut and Morehouse, Strauss and Corbin). Data collection methods include interviews, observations, correspondence, journals, and artifacts. A significant amount of data was collected over the Internet using asynchronous and synchronous communication (Markham, Mason, "Ethnography in Cyberspace").

The informants in this study include writers whose orientations range from academic, to business, to creative. At the time of data collection, they all composed regularly in a hypertextual writing space and published on the World Wide Web. Although it is possible to compose in hypertext that is not destined for the Web—thus integrating only internal hyperlinks—I did not encounter writers who used hypertext this way. To my informants, hypertext and the

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Web were virtually synonymous. I collected data from seven "major" writers who used hyperwriting in their professions, and approximately ninety "minor" writers in the group setting of three classroom-based writing courses. Further, having authored extensively in hypertext myself—and having assumed the posture of the "indwelling inquirer"—I also drew on my own experiences. In my dissertation, I reported my complete findings in the manner of an "emic" or "thick" description extended to include interpretations, speculations, and pedagogical applications (Mason, *From Gutenberg's Galaxy*). In theorizing a conceptual model based on my findings, I believe I have achieved the ultimate goal of qualitative research to develop "the highest level of interpretation and abstraction from the data in order to arrive at the organizing concepts and tenets of a [grounded] theory to explain the phenomenon of interest" (Maykut and Morehouse 122).

As stated above, the principal conceptual framework for my interpretations is a significant body of pre-hypertextual writing theory, and a small but growing body of hypertext theory. I will elaborate on this framework by giving a brief overview of writing and hypertext theories as follows:

The 1960's witnessed a major shift away from a behaviorist understanding that viewed writing principally in terms of models and rules derived from finished texts. This shift is embodied in what we now call writing theory or composition theory. Writing theory is grounded in a philosophy of rhetoric that rejects a traditional product-oriented understanding of writing in favor of a process-oriented approach. Early writing theory draws heavily on the philosophies of Kenneth Burke who regards language first and foremost as symbolic action and only second as representation. The work of Richard Rorty, Thomas Kuhn, and Clifford Geertz further shaped writing theorists' growing understanding of the role of social and cultural contexts in the writing process. Moreover, the influences of Michael Polanyi, John Dewey, Suzanne Langer, Lev Vygotsky and Jerome Bruner inspired the notion of writing as both a tacit and a transactional process with both cognitive and social implications. Early explorations of the writing process focused on an individual writer's cognitive process. Tensions soon broke out between theorists who focused on individual cognition and those who viewed writing as a socially contextualized process. Bizzell and Faigley synopsize this complicated intellectual exchange in theoretical models that help us to understand the evolution of writing theory. Exchanges among process theorists set in place a framework for "reinventing" the rhetorical tradition (Freedman and Pringle) in such a way as to emphasize ultimately both the cognitive and social dimensions of writing in order to reveal the full complexity of writing as "a manifestation of complex and interpenetrating cognitive, social, and cultural processes" (Kennedy 243). It is upon this dynamic that the sub-division of writing theory known as genre theory is built. Genre theory is the most fully elaborated theory of writing to date because it joins the micro level of writing to the macro level of discourse, unites process with product, and connects the individual (cognitivist) and the social (constructivist) approaches. It is the link between writing theory and hypertext theory.

Genre theory bridges the theoretical gap between traditional writing and hypertext because, like the broader conceptual framework of discourse theory, genre theory recognizes writing as a form of social practice. Genre is understood differently than in its more traditional literary sense of textual features (Freedman and Medway). Genre here includes the interests, goals, and shared assumptions implicit in different discourse communities. Genre theorists explore the ways in which these factors function as heuristics of process that culminate in textual practices and features (Berkenkotter and Huckin). Noted discourse theorist Norman Fairclough details the ways in which discourse is social practice. In his 1995 study, *Critical Discourse Analysis: The Critical Study of Language*, Fairclough defines discourse not only as language in sociocultural practice; he further observes that "texts in contemporary society are increasingly multi-semiotic. . . .not only because they incorporate photographs and diagrams, but also because the graphic design of the page is becoming an ever more salient factor" (4). Writing in 1995, Fairclough's definition of discourse anticipates the impact of hypertext on text. Genre theory provides a much-needed link to discourse theory and, by extension, to hypertext theory since writing theory, with few exceptions, (Hawisher and Selfe, Selfe and Hilligoss) treats hypertext as a displacement of print-based literacy (Johnson-Eilola). Like Lemke, I find it more logical to view hypertext in the larger ecosocial context of a communication continuum that begins with grunts and cave drawings.

Hypertext theory is an interdisciplinary framework that that draws on postmodern theory in general, and literary, communication, and social theories in particular. Best known among hypertext theorists are George Landow, Jay David Bolter, Paul Gilster, Richard Lanham, Michael Joyce, Paul Levinson, Steven Johnson, Janet Murray, Stuart Moulthrop, James O'Donnell and Sherry Turkle. What all these theorists share in common is a view of hypertext as a paradigm shift, and as a physical embodiment of the ideal text envisioned by the postmodern theorists such as Foucault, Barthes, Derrida, and Bakhtin; that is, text whose structure consists of multi-sequential nodes, links, and

networks, whose content can include the aural and the pictorial, and whose interactive nature re-negotiates the relationship between reader and writer. Hypertext is thus understood by hypertext theorists as a phenomenon that reconfigures the writing space and the thinking processes behind it. As Gilster observes, "hypertext is a mental process as well as a digital tool" (138).

It is within the theoretical framework described above that I interpret my data. In the original full length study (Mason, *From Gutenberg's Galaxy*) I identified, reported, and interpreted a number of immediate contextual concerns. These included the Internet as a public writing space, multimedia, collaboration, and "techno-angst." I further extended my interpretations to suggest pedagogical implications. Finally, I used my interpretations as a scaffold upon which to build my own theoretical speculations about the impact of hypertext on ways of thinking and knowing. In the limited space of this paper, I offer a much-reduced synopsis of the central focus of my research: the particulars of the hyperwriting process. From my interpretation of these particulars I theorize a new process model. While avoiding the positivist pitfall common to generalization, I do believe it is both the prerogative and responsibility of the qualitative interpreter to identify commonalities as a basis for theoretical speculation. It is these common practices among my informants that I will now describe.

The Importance of the Visual

The need to visualize both the "look" on the screen and/or the overall design of their "docuverse" was uppermost in the minds of most informants when they faced a new hyperwriting task. ("Docuverse" is a term coined by Theodor Nelson to describe a hypertextual document.) Different informants had different ways of addressing this challenge, but each relied on some form of visual schematization. Terms such as story-boarding, mind-mapping, sketching, and drawing were commonly used by the writers under study to describe their process. The words of my informant, Mac, best represent this experience. Mac said, "Well, I think the first thing—and everything plays off this—is that you start essentially with a storyboard, much more the way you would approach putting together a cartoon or a movie than a simple piece of writing." Concern over how to visualize their writing space ranged from envisioning the macro level of the site as a whole—colors, shapes, and structural relationships—to envisioning the micro level of individual page layouts. Further, the potential to include images—both still and animated—seemed to invite writers to imagine the pictorial as an intrinsic part of whatever text they were composing. The need to visualize occurred early in most writers' processes and persisted throughout.

Considerations of Structure

According to hypertext theorist Jay David Bolter, "In this shifting electronic space, writers will need a new concept of structure. In place of a closed and unitary structure, they must learn to conceive of their text as a structure of possible structures" (144). A concern with structure in terms of navigational paths was common to all my major informants. They acknowledged this to be a new writing concern. My informant Jay put it this way: "I had to determine how people might look through the material and what people looking through the material might be searching for, and what kinds of questions they might have, to first and foremost anticipate the kinds of twists and turns that my readership might take. I had to go there before they did. This is different, this trying to anticipate the thought processes of other people." I believe Jay identifies a fundamental difference between printed text and hypertext. Writing in hypertext forces a higher degree of audience anticipation on the part of the writer. It is easier to predict reading patterns in print; options are fewer and more obvious. How to divide text, what to include in menus, and where to place hyperlinks in order to build trails and "leave breadcrumbs" thus become crucial decisions in hypertextual structuration. In building these trails, however, writers must envision the stability of their text much the way Schryer describes genre in the context of social practice as "stabilized-for-now" (Freedman and Medway 105-124). Janet Murray comments on this complex socio-cognitive process in *Hamlet on the Holodeck* when she observes, "authorship in electronic media is procedural. Procedural authorship means writing the rules by which the texts appear as well as writing the texts themselves" (152). It is questionable, however, to what extent those writer-based rules will be followed. Readers in hypertext are free to follow whatever paths they choose and create their own structures. Hypertext theorists comment widely on the role of the reader in creating coherence. It may well be that, as Myka Vielstimmig suggests, when it comes to hypertext "the coherence is performative" (31). Nonetheless, writers appear to be challenged to envision a range of paths in order to create a navigable structure. Furthermore, the writer's acute awareness of the reader's role in negotiating meaning emphasizes the redefinition of the constructivist

transaction between writer and reader that is emerging in this medium (Bolter, Landow, Johnson-Eilola, Sosnos[1] i). Fairclough's definition of discourse as "language seen as a form of social practice" is clearly evident (6).

Content and the Place of Words

Composing in a multi-medial "writing" space, my informants began to question the role of words. The majority tried to eliminate words when possible, sensing that in this medium, "a picture is worth a thousand words." Among my informants, Mary, an English teacher, noted that when she hyper-writes words are the last element she considers whereas in traditional text they are the first. Mary also observed her tendency as a hyper-writer to avoid complex sentences in favor of subject-verb-object, and—much to her amazement—a sudden acceptance of incomplete sentences. Informant Don described how he went to extraordinary lengths to minimize words. He even claimed his primary concern was "how the page looks rather than the content it contains." To get the "look" he wanted, Don admitted he'd do anything to "make the words fit into a specific size cell in the table." Rose, a writer of hypertext fiction, still valued words but said that in hypertext, "I think I tend to be shorter—both my stories and the sentences and words in them." Several informants remarked that the ability to hyperlink to external resources often eliminated the need to "write" text at all in some circumstances. In sum, my data suggests that hyperwriting requires more than word-based language skills, and that content is defined as more than words. Writing in this medium thus appears to draw on more than "linguistic intelligence" (Gardner), and re-configures the role of words within the semiotic configuration of the writing space. This multi-medial reconfiguration of the writing space may be welcome news to intelligences and learning styles that have been previously undervalued in the traditional curriculum.

Conventions

As with any new medium, conventions develop. In printing, for example, we take for granted pagination, margins, standardized spelling, indexes, and so forth. Hypertext in the form of a website is no exception. My informants concerned themselves with the increasingly expected conventions of this medium. They knew, for example, that readers would expect a navigation bar on each page, and they deliberated about where to place it. Informants concerned themselves with page titles, menus, banners, headers, footers, back-to-top icons, home icons, authorial information, and dates. They also pondered what to do about conventions connected to the "Gutenbergian artifact" (Negroponte) of copyright. They worried about if and how sources for material they included in their websites should be cited, and whether and how to copyright their own original material. Informants also had to unlearn and relearn common habits based on print-based conventions. Underlining, for example, creates confusion if used to highlight text since hyperlinks themselves are underlined. Finally, within a medium as new as Web-based hypertext, conventions metamorphose continually as technology creates new options. Thus, my informants were confronted with the stress of a medium whose points of reference were constantly shifting.

The particularities of the hyperwriting process that I have highlighted above constitute a brief overview of the key findings in my study. A more extended analysis, and a range of less commonly cited habits are detailed in the full study (Mason, *From Gutenberg's Galaxy*).

A Conceptual Model for the Hyperwriting Process

Perhaps it was working in such a visual medium that prompted me increasingly to visualize the substance of my interpretations as a concept map. "A Process Model" (Fig. 1) represents the interpretations of my empirically grounded theory in a single conceptual image. This model is not meant to be definitive or prescriptive in any way. Writing is a highly individual yet complex activity that cannot be reduced to a single model. Furthermore, as research evolves new ways of understanding the hyperwriting process will emerge. The value of any model, however, is that it allows researchers a concrete point of reference from which to question and conceptualize further. As a result of my findings, I have also come to believe that graphic representations engage a part of the brain that words do not and thus, when combined with words, can transform scholarly theorizing into a more whole brain activity.

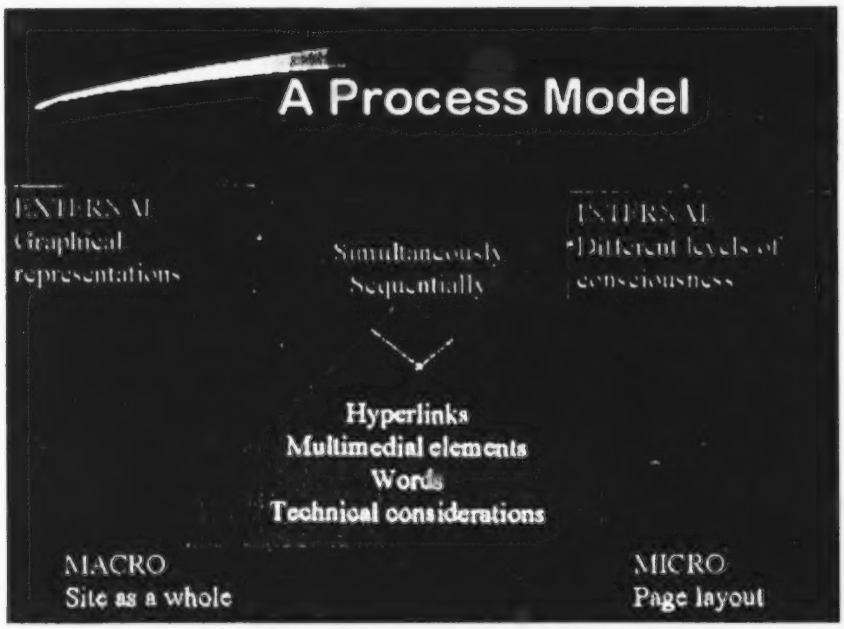

Fig. 1: A New Process Model for Hyperwriting

Here is how I would verbally describe the hyperwriting process as it is represented in the "new model" presented (Fig. 1). The "typical" hyper-writer appears to hold in mind and make key decisions about many elements of a given writing task at the same time. Some of these elements are common to a Gutenbergian writing space and are a given in any writing medium (e.g., audience, purpose, words); however, many elements are new rhetorical considerations (e.g., multi-media, hyperlinks, technical functions). It is these new elements that this model embodies.Because of the number of diverse elements the hyper-writer appears to consider both simultaneously and sequentially, it seems logical that different levels of consciousness may be involved. Moreover, the hyper-writer must consider both the macro-level (e.g., navigational system, style templates) and the micro-level (e.g., page layouts, content) simultaneously as they impact on each other in an electronic environment that is always in a kind of inter-dependent controlled motion rather than frozen on a printed page. To accomplish this multi-faceted procedure, the hyper-writer likely processes these elements internally at different levels of consciousness both simultaneously and sequentially, while at the same time representing these elements and their evolution externally on either paper or—more likely—by using web authoring software or even hard-coding in HTML. These external representations appear to be highly graphical in nature as compared to the traditional writing process that is constituted largely by words. Holistically, this model represents what may be the most crucial distinction between traditional writing and hyperwriting, between Gutenberg's Galaxy and Cyberspace—as most of my informants noted in various ways—*there is just so much more to deal with all at the same time*!

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